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Proposal Abstract

Applicant Name: Montana Water Trust

Project Title: Investigation of Groundwater-Surface Water Interaction Relating to Instream Flow Water Leases in the Little Blackfoot Valley

The Montana Water Trust (MWT) proposes to partner with the Little Blackfoot Watershed Group to: 1) characterize the losing and gaining reaches of a nine mile stretch of the Little Blackfoot River (LBR) from Elliston to Avon, and 2) assess the impacts of converting consumptive water rights to instream flow use. This groundwater-surface water interaction study will allow MWT to address the chronic streamflow depletion and water temperature problems in the LBR by developing future instream flow water leases with landowners. The proposed study will cost \$31,500, with \$25,000 requested from NRD, and take place from July 2006 through August 2007.

It is important to balance the competing needs for water use in this basin, while also improving water quality and extending the available water supplies; these are the goals of MWT, the Little Blackfoot Watershed Group, the Deerlodge Valley Conservation District, and other groups working in the basin. The proposed study will allow MWT and local stakeholders to better understand the natural hydrology as well as agriculture-related impacts on streamflows in the LBR before implementing cooperative, grassroots restoration efforts.

In 2004, MWT initiated a targeted baseline water budget and stream temperature study to identify the most chronically dewatered sections of the LBR, partnering with the same groups listed above. This study determined that the LBR had a significant losing reach below Elliston to Snowshoe Creek Road. The results of the 2004 study were used by MWT to implement a two-year water lease with landowner Jeff Janke; the hydrologic impacts of this water lease will be measured as a component of the proposed study.

The methodology for the groundwater-surface water interaction study will entail: 1) multiple synoptic flow runs on the LBR, major tributaries, and irrigation diversions for one full year; 2) monthly well monitoring of 15 wells to measure groundwater levels; and 3) interviews with landowners to gauge their willingness to participate in restoration efforts (specifically water leases), and to document the historic and current water use in the LBR basin.

The critically low flows in several stretches of the LBR are recognized as a limiting factor in this watershed. However, many local landowners have requested data on how irrigation return flows and natural hydrology affect the water quantity in the river before they will enter into voluntary water leases. No studies have monitored seasonal groundwater levels in the LBR, although groundwater upwellings are believed to be a major source of inflow for several reaches of the river. This project will lay the foundation for restoring water quantity in the LBR, as well as major dewatered tributaries, like Snowshoe Creek. Restoring flows will improve water quality, decrease water temperatures, enhance fish and aquatic habitat, and also improve the recreational services on the LBR.

Technical Narrative

Applicant Name: Montana Water Trust

Project Title: Investigation of Groundwater-Surface Water Interaction
Relating to Instream Flow Water Leases in the Little Blackfoot Valley

A. Describe Project Need

A-1 Describe the problem this project will address.

The Little Blackfoot River (LBR) stretches 48 stream miles from its headwaters in the Helena National Forest to its confluence with the Clark Fork River near Garrison. The river runs parallel to Highway 12 in much of the lower half of the drainage, and the majority of the watershed is rural. The primary water uses in this drainage are for agriculture, fisheries, and recreation. Other important uses include aesthetics, domestic water supplies, industrial/mining operations, and power generation at facilities along the Clark Fork River. Water quantity is a recognized limiting factor for aquatic habitat in the LBR, and these competing consumptive uses put pressure on the already-impaired river.

The LBR is classified by the Montana Department of Fish, Wildlife and Parks as an “outstanding fisheries resource,” and supports more than 7,000 angler use-days each year. The LBR has also been identified as a “core area” for native bull trout (listed as threatened under the Endangered Species Act), and is home to genetically pure westslope cutthroat trout (a Montana “species of special concern”). However, the LBR’s water quality and aquatic habitat are far below potential standards due to human influences. Although the LBR and all of its tributaries are classified B-1 in the Montana water quality standards, the river is impaired in its ability to support state-designated water uses for trout fisheries or drinking water due to pollution from nutrients, sediments, riparian degradation, and dewatering, among other habitat alterations.

In 2002, Fish Wildlife and Parks listed the LBR from Elliston Creek to the confluence with the Clark Fork River as a chronic stream-dewatering area of concern. This designation applies to “streams that support important or contribute to important fisheries that are significantly dewatered by man-caused flow depletions,” and where “dewatering is a significant problem in virtually all years.” Agricultural water rights for the main stem of the river date back to 1881, with irrigation diversions predominant throughout the 11,000 acres of traditionally irrigation land in the basin. The basin was closed in 1991 to new surface water rights, but the LBR is still over-appropriated, with more water claimed for various uses than exists in the system. Current water rights have yet to be adjudicated, and LBR water right holders are awaiting a final decree, mandated by the legislature to be completed by 2020.

The Montana Water Trust (MWT) proposes to partner with the Little Blackfoot Watershed Group to assess the impacts of converting irrigation water rights to instream use by characterizing the losing and gaining reaches of the LBR from Elliston to Avon. The study of groundwater-surface interaction in this 9-mile reach will allow MWT and to effectively address the chronic streamflow depletion and water temperature problems in

the LBR by developing future instream flow water leases with landowners. Many local landowners have requested data on how irrigation return flows and natural hydrology affect the water quantity in the river before they will enter into voluntary water leases. No studies have been done monitoring seasonal groundwater levels in the LBR, although groundwater upwellings are believed to be a major source of inflow for several reaches of the river.

The critically low flows in several stretches of the LBR are recognized as a severe problem, and the proposed study will allow MWT and local stakeholders to better understand the natural hydrology as well as agriculture-related impacts on streamflows in the upper LBR. It is important to balance the competing needs for water use in this basin, including instream flow, while also improving water quality and extending the available water supplies; these are the goals of MWT, the Little Blackfoot Watershed Group, the Deerlodge Valley Conservation District, and other stakeholder groups working in the basin. However, before restoration efforts and water use solutions can occur, all stakeholders agree that more information is needed on the surface water and groundwater interactions in the watershed. The results from the proposed study will prove invaluable for encouraging landowners to participate in targeted, cooperative solutions, such as instream flow water leases, to the identified problems of over-use and chronic dewatering in the LBR.

MWT used information from the “Little Blackfoot Streamflow and Thermal Assessment Project” (2004) as well as R2Cross modeling efforts to implement a voluntarily, water lease pilot project with Jeff Janke on the LBR in 2005 and 2006. The pilot project serves as a demonstration of cooperative, mutually beneficial solutions to the problem of chronic dewatering on this river; this demonstration will be augmented by studying and sharing the lease’s impacts on nearby groundwater and surface water flows. Although the Janke lease has begun to address the documented streamflow depletion and water temperature problems in the prioritized reach below Elliston to Snowshoe Creek Road, additional streamflow restoration projects are required to mitigate water quantity and quality problems in the LBR. MWT would like to implement several water lease projects in the future on the LBR to meet minimum instream flow goals.

In addition, MWT proposes to conduct surveys and interviews to provide: 1) information on landowners’ willingness to participate in restoration efforts (specifically instream flow water leases), and 2) document the historic and current water use and observed hydrology patterns in the LBR basin. This project will lay the groundwork for restoring water in critically dewatered reaches of the LBR, as well as major dewatered tributaries, like Snowshoe Creek, through voluntary agreements with landowners. The study will address data gaps in the current knowledge base, and provide information requested by the Little Blackfoot Watershed Group, the Conservation District, and individual water right holders, leading to consensus-based solutions to the ongoing water use issues in this over-appropriated basin.

A-2 What circumstances precipitated the need for the project?

In 2004, MWT initiated a targeted water budget and stream temperature study to identify the most chronically dewatered sections of the LBR, partnering with the Little Blackfoot Watershed Group and the Deerlodge Valley Conservation District. This study identified two critical reaches of concern for flow and temperature along the mainstem

LBR: 1) from below Elliston to the Snowshoe Creek Road, and 2) from the Iron Bridge to the Clark Fork River. Both reaches of the river had very low summer flow levels and exhibited warm water temperatures.

The losing reach between Elliston and the Snowshoe Creek Road averaged a 30% loss of total flow, visible during all flow runs. The losing reach was thought to be attributed to losses to groundwater during the spring, summer, and fall, and losses to irrigation diversions during the summer. The LBR displayed a significant gaining reach between the Snowshoe Creek Road and Threemile Creek that averaged a 55% gain in total flow visible during all flow runs. The gain was attributed to ungaged surface inflow, groundwater discharge, and possibly irrigation related passive storage. In general, the median temperature patterns mirrored flow patterns with areas of low streamflow having higher median water temperatures. Maximum August temperatures surpassed suggested survival recommendations (67⁰ F) for cold water fisheries at 90% of the monitoring sites. For more detailed results, please refer to the attached study: “Little Blackfoot Streamflow and Thermal Assessment Project.”

Fish Wildlife and Parks has set an instream flow target of 85 cubic feet per second (cfs) from Dog Creek to the mouth and 17 cfs in the upper basin. However, data from subsequent studies, including MWT’s water budget study, have shown that the flows in certain reaches in the LBR are significantly under this target; for instance, the losing reach below Elliston to Snowshoe Creek Road had a flow rate under 3 cfs in August 2004. Therefore, MWT conducted R2Cross measurements on the identified critical reaches of concern in order to further establish accurate, reasonable minimum instream flow needs for the full support of a cold water fishery. The Colorado Water Conservation Board developed the R2Cross methodology in 1996, which is based on two biological assumptions: 1) fish are the species most sensitive to minimum instream flows in coldwater ecosystems, and 2) riffles are a critical component to healthy aquatic ecosystems and are most sensitive to a variation in discharge.

MWT collected R2Cross hydrologic measurements on the LBR at the two identified locations on February 8, 2005, and the instream flow recommendations from the R2Cross measurements are summarized below. Additional R2Cross measurements will be taken during the timeline of this study (July 2006 to August 2007) to provide a more comprehensive basis for determining the instream flow needs of the system. The collection of biological data during this time period will also provide a better understanding of the aquatic ecosystem (see Section F).

Table 2-5. Summaries of R2Cross Instream Flow Recommendations Two Locations on the Little Blackfoot River

R2Cross Hydrologic Data Collection Site	Summer Recommendation (CFS)	Winter Recommendation (CFS)
Little Blackfoot River above Snowshoe Creek Rd	10.96	9.32
Little Blackfoot River at USGS Gage Station	78.56	25.05

The combined results from the R2Cross and the water budget study were presented to LBR landowners in early 2005, building trust that streamflow restoration projects are based on accurate data. These results helped MWT implement a voluntarily water lease with landowner Jeff Janke in the summer of 2005 that restored critical flows to one of the identified dewatered reaches, just above Snowshoe Creek Road. Janke recently signed a subsequent agreement *not* to divert water for the upcoming 2006 irrigation season; this proposed study will evaluate the hydrologic impacts of this instream flow water lease by monitoring ground and surface water above and below Janke's irrigation diversion this summer.

The results from the proposed study will be evaluated in conjunction with the 2002 riparian assessment data and the 2004 water budget data to determine the effectiveness of the current instream flow lease, and the potential impacts to return flow in the gaining reach of the river. This study will also allow MWT to recommend a minimum instream flow for the LBR between Elliston and Avon, taking into account groundwater upwelling and naturally losing reaches in this stretch. The results will be presented to landowners and irrigators in the basin (who initially requested the information), and will ideally lead to additional water leases that restore flows and enhance water quality in the LBR.

A-3 Description of Ongoing or Past Efforts to Address Problems

The water quantity problems in the LBR drainage have been the focus of several past efforts. As early as 1959, the Powell County Water Resources Survey conducted by the Montana State Engineer's office described the condition of the LBR watershed as "only fair." Currently, DEQ has listed the 26-mile reach from Dog Creek to the mouth of the LBR as "non-supporting" of aquatic life, cold water fisheries, and drinking water, and "partially-supporting" swimming. Several tributaries to the LBR have also been classified as impaired, including Carpenter Creek and Snowshoe Creek (also chronically dewatered); these are two of four tributaries that will be a focus of the proposed study.

The Montana Department of Environmental Quality is required to work with local watershed groups and other stakeholders to develop restoration plans by 2007 that address the sources of impairment in the LBR and its tributaries. In addition, the Helena National Forest completed a watershed plan for the portion of the LBR within the forest boundaries (22 upper stream miles) on how to best manage the watershed based on biological considerations, public expectations, and desired future conditions.

In 2001, an inventory and riparian assessment of the LBR was sponsored by the Little Blackfoot Watershed Group and the Deerlodge Valley Conservation District. Land and Water Consulting completed this report in 2002, which: 1) detailed the impaired reaches of the river; 2) described causal factors for observed problems; and 3) established a direction for a water quality improvement plan. The current condition of the LBR is summarized in this report, which contains detailed maps, photographs, and assessment statistics describing the nature and urgency of the problems to be addressed in this watershed in the future.

Several groups, including those mentioned above, are working to address the water quantity issues, as well. In 1991, two years after Montana Fish, Wildlife and Parks filed for instream flow protection throughout the upper Clark Fork River basin, the state legislature closed the upper Clark Fork River Basin to new water use permits and created

the Upper Clark Fork River Basin Steering Committee. The permanent moratorium on new water use permits protected the value and status of existing water rights. The committee was mandated to develop a management plan for presentation to the 1995 legislature, and established broad water use policy (including an instream water leasing pilot study). However, the plan does not establish specific mechanisms for evaluating and resolving localized water quality or quantity problems. The restoration and management of the LBR watershed requires cooperative, local approaches for solving water use issues, such as MWT's private water leasing program.

The Upper Clark Fork is the first and only management area where new groundwater developments are systematically evaluated for their relationship to surface water supplies, a progressive step toward holistic water management. Directly or substantially connected groundwater developments will not be approved. This indicates the high priority for collecting data for determining the relationship between ground and surface water in the LBR drainage, especially near the towns of Elliston and Avon.

B. Describe the Project Goals and Objectives.

MWT proposes to partner with the Little Blackfoot Watershed Group to assess the impacts of and potential for converting irrigation water rights to instream use by characterizing the losing and gaining reaches of the LBR from Elliston to Avon. The study of groundwater-surface water interactions will allow MWT to effectively address the chronic streamflow depletion and water temperature problems in the LBR by developing future instream flow water leases with landowners. To augment the hydrological data, MWT will also conduct interviews to provide historical sociologic data about past and current water use in the LBR, as well as landowners' attitudes and objectives for restoration in the basin. One restoration criterion listed but not measured in Land and Water's 2002 assesement was "Landowner Willingness;" this social data will allow MWT to initiate targeted, ecologically significant water leases in the LBR.

The primary goals are:

1. Characterize the hydrologic patterns within the drainage between Elliston and Avon for one year, including flows in the mainstem, major irrigation diversions, the four tributaries in this reach (North Trout, Trout, Snowshoe, and Carpenter Creeks), and the groundwater levels near the river.
2. Gather historical information on water use in the LBR, and gauge landowners' willingness (and any past efforts) to participate in voluntary restoration efforts.
3. Disseminate the results of the study to landowners and stakeholder groups.
4. Begin developing additional instream flow leases to restore streamflows in identified dewatered reaches and enhance the overall water quality, aquatic habitat, and recreational uses of the LBR.

The objectives to reach these goals are:

1. Monitor 15 wells once a month for 12 months.

2. Take flow measurements on 12 active irrigation diversions and at 15 sites along the mainstem LBR, including one site at each of the following tributaries: North Trout, Snowshoe, Carpenter, and Trout Creeks.
3. Conduct surveys and interviews to evaluate landowners' willingness to participate in voluntary restoration agreements, specifically instream flow water leases. Collect information on past and present water use in the LBR.
4. Present results to interested stakeholders within the LBR watershed and to water resource groups in other Montana watersheds.
5. Implement new long-term water leases by the summer of 2007 and monitor the hydrologic, biologic, and sociologic impacts from the existing water lease(s).

The current condition of the LBR and its natural resources is best characterized by the *Little Blackfoot River Physical Features Inventory and Riparian Assessment* (2002). Please see Section A for more details on the past and current reports on the state of the LBR. While the results of the study will lead to projects that improve and enhance the aquatic resources and public recreation in the LBR, this specific project will simply provide groundwork and information for future streamflow restoration projects. For a map delineating the proposed study area, please see Figure 1.

C. Describe the Project Implementation Plan.

Project implementation funding is sought for the summer of 2006 to allow MWT to begin the study tasks in July. MWT will contract the monitoring field work to Land and Water Consulting/PBS&J in Helena, with Taylor Greenup and Gary Ingman heading the project. MWT will conduct all landowner interviews and outreach, helping to obtain property access to install piezometers and obtain irrigation diversion flow measurements. Due to Montana Stream Access Law, most of the study's flow data collection will not require private access agreements, but the well monitoring will require permission from the wells' owners. This study will consist of seven specific tasks overlapping throughout a 13-month period. Tasks # 4, 6, and 7 will be completed by MWT, and Tasks #1, 2, 3, and 5 will be contracted to Land and Water Consulting.

Task 1: Install piezometers

Taylor Greenup at Land and Water will install three piezometers, or shallow temporary wells, to measure the groundwater levels near the confluence of both Carpenter Creek and Snowshoe Creek with the LBR. This section of the LBR has previously been determined (in the 2004 MWT-funded study) to be an area where a significant losing reach is followed by a significant gaining reach, presumably from an upwelling in groundwater. Installing the piezometers will require permission from landowners: Jeff Janke has given his consent, and MWT is in contact with John and George Senecal, the lessees of the downstream property. Installation should take less than one day.

Task 2: Monitor wells

Twelve existing wells will be monitored by a Senior Technician from Land and Water Consulting once a month for 12 months with an electric water level tape. These wells border the LBR from Elliston to Avon, and MWT is currently in contact with landowners to obtain permission for monthly property access to collect water level measurements. The Senior Technician will spend approximately 135 hours monitoring wells, as well as travel expenses.

Task 3: Streamflow gauging

A Staff Scientist from Land and Water Consulting will take flow measurements on 12 active irrigation diversions and at 15 sites along the LBR, including one site at each of the following tributaries: North Trout, Snowshoe, Carpenter, and Trout Creeks. These discharge measurements will be taken with a Marsh-McBirney flow meter using accepted USGS protocol for open channel flow measurements. Each of the 12 diversions and 15 river/tributary sites will be measured once to record peak flows in the spring, once to record base flows in the fall, and twice during the irrigation season in the summer (see timetable below). This task will require 65 hours of the Staff Scientist's time, as well as travel expenses.

Task 4: Conduct landowner interviews

The Montana Water Trust Project Managers, Conor Black and Barbara Hall, will conduct interviews with the 12 major landowners in the valley to gauge public perception of the voluntary instream flow pilot lease currently underway, and landowners' willingness to enter into future water transactions to restore flows in severely dewatered reaches of the LBR. This social data will allow MWT to initiate focused, ecologically significant water leases in the LBR, and determine the most effective grassroots approach to solving water use issues in this dewatered basin. Interviews will require 100 hours of MWT staff time. An additional 125 hours of project development and water rights research, as well as MWT travel expenses, will be funded by matching dollars from the Columbia Basin Water Transactions Program.

Task 5: Data analysis and report preparation

Land and Water scientists will analyze the field data and prepare a report of the results in the late summer of 2007. This analysis will require 30 hours of staff time, including 15 hours for an administrative assistant at MWT to coordinate presentations and report production. MWT will present and disseminate the report to the Little Blackfoot Watershed Group, the Deerlodge Valley Conservation District, local landowners, and all interested public and private groups in order to facilitate local, science-based solutions to water use issues in the LBR drainage.

Task 6: Present results

MWT will present and disseminate the report to the Little Blackfoot Watershed Group, the Deerlodge Valley Conservation District, local landowners, and all interested public and private groups in order to facilitate local, science-based solutions to water use issues in the LBR drainage. These results will also be presented in other watersheds, such as the West Gallatin and Bitterroot, where many irrigators have questions on

surface-groundwater interactions and how they relate to streamflows and irrigation return flows.

Task 7: Begin developing water leasing projects

Collecting the data described above, including the interviews from Task 5 and the CBWTP-funded research and project development, will allow MWT to develop voluntary instream flow water leases in future years that benefit the landowners, the water quality and quantity of the LBR, and the community as a whole. Providing landowners and the conservation community with the data on the hydrologic dynamics of the river will allow MWT to scientifically explain the impacts of water leasing (from our pilot lease study) and to point out where future water leases will be most effective in solving the chronic dewatering of the LBR.

Please see the attached copies of MWT's "Diversion Reduction Agreements" with Jeff Janke for an example of an instream flow water leasing contract.

D. Project Time Schedule.

TASK	COMPLETION DATE					
	Jul-06	Aug-06	Oct-06	Mar-07	May-07	Aug-07
1. Install piezometers (3)						
2. Monitor wells once a month for 12 months						
3. Streamflow gauging (4 times in one year at 27 sites)						
4. Conduct landowner interviews (~12)						
5. Data Analysis and Report Preparation						
6. Present results to landowners and interested parties						
7. Begin developing water leasing projects						

E. Describe Methods and Technical Feasibility.

Please see Section C for details on methodology for each of the seven phases, specifically the field data collection methods. The electric water level tape is an efficient and very cost-effective means of well monitoring, with the main cost from the travel and staff time required to take measurements at each of the 15 wells once a month.

The streamflow monitoring techniques described were used in the 2004 water budget study, and are also employed by MWT during our hydrologic monitoring (see Section F). This one-year study is suited to using Marsh-McBirney flow meters, a more cost-effective flow monitoring method than permanent devices. However, a longer-term

study of several years might be conducive to installing Aquarods, or a remote-sensing electronic device. MWT is currently pursuing other funding sources to install a permanent streamflow monitoring device in the critically dewatered reach above Snowshoe Creek, since we plan to continue LBR water leasing projects in the future.

The landowner interview phase (#4) poses the most uncertainty, mainly with the proposed implementation time schedule. However, the quality and usefulness of the resulting information is also uncertain. We hope that some interviews will lead to collaborative, grassroots solutions to the chronic dewatering in the LBR, as well as provide guidance on how to approach landowners for other restoration efforts in the basin. These qualitative interviews will also reveal historical water use information and on-the-ground observations of return flows and other hydrology site-specific on private land. Nevertheless, social monitoring inherently requires more flexibility than quantitative monitoring. MWT recognizes that Phase 4's qualitative approach poses some uncertainty, especially when soliciting subjective observations.

One data gap in the proposed study is that we are only characterizing the hydrology of one of the identified LBR reaches of concern. The 2004 water budget study also determined a critically dewatered reach at stream mile 22, near the confluence of the LBR with the Clark Fork River. This study will not address the lower sections of the LBR due to time and money restraints, but future groundwater-surface water studies should focus on this important section of the river. MWT plans to actively pursue streamflow restoration efforts in the lower reaches of the LBR as well to ensure comprehensive, connected habitat. We believe that the landowner interview and data presentation phases (#6 and #7) of this study will positively affect future efforts and relationships with landowners in the lower reaches of the LBR.

F. Describe the Monitoring Plan.

Although this study requires no monitoring once the study tasks are completed, MWT already has a monitoring plan in place for the LBR. We plan to continue and expand monitoring efforts in this drainage as we develop more water leases. This surface-groundwater interaction study will allow us to hone all components of our monitoring program on the LBR, such as directing where future permanent flow measuring devices should be installed.

MWT has established a three-part monitoring program for all of our streamflow restoration projects, including the water lease on the LBR: 1) hydrologic 2) biologic and 3) sociologic. This monitoring program operates with support from the organization's employees, independent contractors, and student interns from the University of Montana. MWT also collaborates with state and federal agencies and local groups to share data, and achieve common monitoring and conservation goals. We will share the results of this proposed study with all interested government and private parties, and also make the results of past and future monitoring efforts available for stakeholders in the basin.

Hydrological Assessment:

The hydrologic monitoring program works to verify delivery of the Montana Water Trust's contracted water, and also to further understand the hydrology of the project watershed. The techniques and tools administered are site specific. Current methodologies include: 1) taking discharge measurements with a Marsh-McBirney flow

meter using USGS-approved protocol for open-channel flow measurements; 2) installing Parshall flumes to measure fixed flow rates in a ditch or canal; 3) installing staff gauges on long-term projects and establishing corresponding stage discharge rating curves; 4) applying R2Cross instream flow incremental methodology to initially assess the minimum flow needs of project streams (see <http://www.montanawatertrust.org/projects/monitoring.html> for more details)

Biological Assessment:

MWT's biological assessment techniques provide an overview of the aquatic health of the ecosystem. Each project has a site-specific plan, which may include: 1) underwater census snorkeling to measure abundance and diversity of fish populations in a selected reach; and 2) redd counts or spawner surveys, as above-water surveys to detect the presence of spawning adult fish.

Sociology Assessment:

MWT contracts with trained professionals to interview water right holders, partner groups, and community members about the impacts of our streamflow restoration projects. Surveys and one-on-one interviews allow MWT to assess the public's perception of water leasing as a new conservation approach, as well as to measure our effectiveness in benefiting landowners, streamflows, and communities.

G. Describe the Qualifications of the Project Team

Land and Water Consulting:

Land & Water was incorporated in 1990 as a consulting firm, providing technical services to government, industry, and individuals. Since then, they've become known for offering a comprehensive range of environmental, natural resource, and engineering services to their clients. Specializing in the assessment and restoration of natural resources throughout the Northwest and northern Rockies, Land & Water's Helena office has unique, site-specific skills to act as the contractors for this LBR surface-groundwater study.

Taylor Greenup, Watershed Specialist, will serve as the lead on this project, with technical expertise offered by Gary Ingman, Water Resources Program Manager. Both scientists have participated in several assessments, restoration projects, and hydrologic studies within the Little Blackfoot watershed, as well as the surrounding regions. MWT worked with Taylor and Gary in 2004 on the water budget and temperature study in the LBR; both are qualified scientists, with excellent track records for field work and data analysis. MWT will be presenting with Taylor at the 2006 American Water Resources Association annual conference on the results of the 2004 study.

Montana Water Trust:

John Ferguson, Executive Director

John is a co-founder of the Montana Water Trust and serves as the Executive Director. John coordinates staff team efforts, serves as a primary contact for collaboration with agencies and organizations, and manages daily operations of the Montana Water

Trust. John also engages in landowner negotiations, conducts research and interpretation of water rights and water law, and advises the Montana Water Trust Board on policy and strategy. John holds a J.D. from the University of Montana School of Law (with a concentration in environmental law), an M.S. in Environmental Studies from the University of Montana, and a B.S. in Communications from Oregon State University. Prior to joining MWT, John was an associate at a Portland, Oregon law firm (Bullivant Houser Bailey) where he practiced environmental law and worked as pro bono counsel for the Oregon Water Trust and the Columbia Land Trust. John is a member of Rotary (Missoula, MT Chapter) and is a regular presenter on water issues at conferences throughout Montana.

Barbara Hall, Project Manager

Barbara holds a B.A. from the University of North Carolina in Economics and a J.D. from the University of Montana School of Law. She was a staff member and conference editor for the Public Land and Resources Law Review at UM, and researched and advised on sustainable natural resource management at the Land Use Planning Clinic. Barbara has diverse experience in the law field, having interned with judges and law firms in Montana and North Carolina. Barbara communicates well with landowners, and has creative approaches for each individual instream flow agreement. She believes strongly in developing local voluntary approaches to preserving natural resources, and uses her legal and environmental background to carry out MWT's goals. Barbara has also been the lead contact with Jeff Janke and is developing other water lease agreements with landowners in the LBR; her knowledge of the watershed and water rights issues in this drainage will prove invaluable during the proposed study.

Conor Black, Project Manager

Conor joined MWT after working with Trout Unlimited on water use and community restoration issues in Idaho. He has a B.A. in Social Anthropology from Harvard, with focuses in environmental science and public policy. Conor has a variety of experience, including work as a legal intern at Edwards Law Firm in Billings, volunteering for the Cuba AIDS Project, and assisting with grassroots campaign projects for MontPIRG. Conor is active in developing landowner relationships throughout Montana, and directs MWT's 3-part monitoring program. He has conducted streamflow discharge measurements and fish snorkel counts on the LBR.

Brianna Randall, Development Associate

Brianna develops Montana Water Trust's programs, from diversifying funding and public relations to conducting outreach and managing the intern program. Brianna holds a B.A. in Biology from the University of San Diego, and an M.S. in Environmental Studies from the University of Montana, where she wrote several research papers on water banks and trusts in the West. She has conducted water quality monitoring for San Diego BayKeeper, and created outreach material as a Public Affairs Intern at Helix Water District in San Diego. Brianna was a naturalist at outdoor education facilities across the country, and writes freelance articles for various publications. Brianna is on the board of the Bitter Root Water Forum, a member of the Missoula Chamber of Commerce, and has taught writing at the U.M. College of Technology. She often participates in project site

visits, and has conducted interviews with landowners regarding streamflow restoration in several watersheds throughout the state.

H. Supporting Technical Documentation

References:

Land & Water Consulting, Inc. Little Blackfoot River Physical Features Inventory and Riparian Assessment. Helena, MT. May 2002.

Land & Water Consulting, Inc. Little Blackfoot River Streamflow and Thermal Assessment Project. May 2005.

Montana Natural Resource Information System. Montana Rivers Information Systems: Database Query and Reporting. <http://nris.state.mt.us/wis//mris1.html>. January 2006.

Montana Natural Resource Information System. Water Rights Information: Database Query. <http://nris.state.mt.us/wis/data/waterrights.htm>. State of Montana. February 2006.

Montana Water Trust website. www.montanawatertrust.org. February 2006.

State Engineer's Office. Water Resources Survey – Powell County, Montana. State of Montana. Helena, MT. 1959.

Upper Clark Fork River Basin Steering Committee. Upper Clark Fork River Basin Water Management Plan. December 1994.

Maps/Photos:

A larger version of the Little Blackfoot River Basin Map can be provided upon request, and will be available at subsequent presentations to the Advisory Council.

Agreements:

Please see attached copies of MWT's 2005 and 2006 water lease agreements with landowner Jeff Janke. Future instream flow projects will utilize similar contracts, with the length of agreement, compensation, and amount of water leased differing for each landowner.

Contract Bids:

The informal bids obtained from three local watershed consulting firms are attached. The businesses solicited for bids are: Land & Water Consulting/PBS&J (Helena), Maxim Technology (Missoula), and Watershed Consulting (Whitefish).

Criteria Statements

1. Relationship of Expected Costs to Expected Benefits:

The Little Blackfoot River, a major tributary to the Upper Clark Fork River, is an injured natural resource that will receive direct benefits from the proposed study. This project will lay the groundwork for restoring water in critically dewatered reaches of the LBR, as well as major dewatered tributaries, like Snowshoe Creek, through voluntary agreements with landowners.

Water quantity is an impairment factor listed in the 2002 Land and Water assessment, and is recognized as a limiting factor for habitat health by state and federal natural resource management agencies and local conservation groups. This study will determine where and when the LBR and its associated fishery will most benefit from increased flows. Increasing streamflows improves overall water quality, creating colder temperatures and enhancing critical fish spawning and rearing habitat. Improving flows and habitat also has direct benefits for lost services such as recreation.

Indirect benefits include maintaining momentum for proactive restoration solutions in this watershed, and following up on previous LBR studies. This project will be useful for all stakeholders in the basin, especially as we disseminate information on landowner willingness to participate in restoration efforts, such as water leasing. This study will also have indirect benefits outside the basin, acting as a model for how to determine irrigation return flows when considering water use solutions.

Direct costs will be NRD project development grant funding and Columbia Basin Water Transactions Program matching funds. In addition, MWT will provide and locate additional funding sources, such as a National Fish and Wildlife Foundation grants to cover the costs of future instream flow water leases resulting from this study.

Indirect costs may result from public state and federal agencies providing technical advice, or contributing time and resources to help coordinate restoration efforts during or after the study.

2. Cost Effectiveness:

MWT determined that the above study design was the most cost effective and efficient. One alternative considered was conducting a groundwater-surface water interaction study on the entire lower section of the LBR from Spotted Dog Creek to the mouth. However, due to limited time and resources, we decided to initially focus on the upper stretch of this 26-mile reach to obtain an in-depth view of the hydrology in the location of our current instream flow lease. The cost of implementing a similar study for the entire 26-mile stretch would be double, and previous studies and observations indicate MWT will receive the most direct benefits and potential water leases by gathering information on the upper dewatered reach identified in the 2002 study.

A “no action” alternative was considered non-viable, as well as detrimental to future streamflow restoration efforts. MWT has received many requests for hydrologic data when meeting with landowners regarding water leasing, specifically on the impacts of irrigation return flows on the LBR. Gathering objective streamflow and well level data will prove invaluable to building trust with landowners. The interviews with

landowners will also provide all stakeholders with information on the potential for collaborative restoration efforts in the basin, and a qualitative historical perspective on water use in the LBR.

The study design chosen will continue to educate landowners on innovative, cooperative restoration approaches, demonstrate the impacts and benefits of the current pilot water lease, and maintain public momentum in LBR restoration efforts. The main costs of the study are travel and staff time, as the data collection methods are extremely cost-effective.

3. Impacts to the Environment and Human Health and Safety:

No negative impacts to the environment or human health and safety will result from the implementation of the proposed project. Positive impacts include: improved water quantity and water quality, enhanced recreational opportunities and aquatic and riparian resources, and increased knowledge of the hydrology and current water use trends in the LBR basin.

4. Public Support:

The following groups/individuals have written letters of support for this project, which are either attached or were sent directly to the NRD program:

- Will McDowell for the Tri-State Water Quality Council
- Matt Clifford for the Clark Fork Coalition
- Taylor Greenup for Land and Water/PBS&J
- Jeff Janke for the Little Blackfoot Watershed Group and as a participating landowner in MWT's streamflow restoration program.
- Stan Bradshaw for Trout Unlimited's Western Water Project

Verbal support for this proposed study was provided by:

- Dr. Vicki Watson and Dr. Lisa Eby from the University of Montana
- Pete Schade for Montana Dept. of Environmental Quality
- Jack Stults for the Montana Dept. of Natural Resources and Conservation

5. Public Access:

The project area is mainly within the high water mark of the Little Blackfoot River and four tributaries, which are state/public waters. Anglers and recreationalists have access to the river up to its normal high water mark under the Montana Stream Access Law. This study will not affect public access points; however, improving streamflows and enhancing the fishery might increase the amount of requests to private landowners for property access by fishers in the future.

Proposal Budget

PROJECT BUDGET SUMMARY FORM									
EXPENSE CATEGORY		UCFRB RESTORATION FUND	APPLICANT CONTRIBUTION			OUTSIDE SOURCES			TOTAL
			Cash	In- Kind	Subtotal	Cash	In- Kind	Subtotal	
1	SALARIES AND WAGES	\$5,335.00				\$5,000.00		\$5,000.00	\$10,335.00
2	FRINGE BENEFITS								
3	CONTRACTED SERVICES	\$18,715.00							\$18,715.00
4	SUPPLIES AND MATERIALS	\$100.00							\$100.00
5	COMMUNICATIONS	\$100.00							\$100.00
6	TRAVEL					\$1,500.00		\$1,500.00	\$1,500.00
7	RENT AND UTILITIES								
8	EQUIPMENT	\$750.00							\$750.00
9	MISCELLANEOUS								
TOTAL		\$25,000.00				\$6,500.00		\$6,500.00	\$31,500.00